

*H A S S E L B L A D<sup>®</sup>*



WIDE-ANGLE  
PHOTOGRAPHY

### Wide-angle lenses—definition

Lenses with focal lengths shorter than the diagonal of the camera format (in millimeters) are usually referred to as wide-angle lenses. The diagonal of the  $2\frac{1}{4}\times 2\frac{1}{4}$  (60×60 mm) Hasselblad format is 78 mm. This means that all Hasselblad lenses with a focal length shorter than 78 mm are wide-angle lenses. A wide-angle lens is also sometimes defined as a lens with a diagonal angle of view exceeding 60°. The size of the diagonal angular field, rather than the horizontal angle, is the generally accepted way of measuring an optic's angle of view. The normal lens for Hasselblad single-lens reflex cameras is the f/2.8 Planar with a 80 mm focal length and a 52° diagonal angle of view. So it is no wide-angle lens according to these definitions. But the 60mm f/3.5 Distagon is. It has the longest wide-angle focal length and is the newest of the C lenses in the Hasselblad system. Its focal length is 60 mm, resulting in a 66° diagonal angle of view. C lenses have built-in leaf shutters. They can be used with the Hasselblad 500C/M, 500EL/M and 2000FC. F lenses, which have no built-in shutters, are designed for the Hasselblad 2000FC. At the time of writing, only one wide-angle lens is available in the F series, the 50mm f/2.8 Distagon.

### History

There were wide-angle lenses available even for the Hasselblad 1600F, the first Hasselblad camera for civilian use. This camera went on sale in 1949.

The special-purpose wide-angle camera, the Hasselblad SW fitted with the outstanding Biogon lens (90° angular field), was introduced in 1954. However, the first Biogon lenses were made by Carl Zeiss, Oberkochen, as early as 1951. So the lens had its 25th birthday in 1976. But despite its age, the optic remains a modern wide-angle lens with hitherto unsurpassed optical performance.

The Biogon is designed as a genuine wide-angle lens. This means that it cannot be used with the Hasselblad 500C/M and 500EL/M since it requires more room between the rear lens element and film plane than is available for mirror travel in these cameras. So the lens has its own camera body to which it is permanently attached. The camera body is only  $1\frac{1}{8}$ " long and is fitted with an optical viewfinder.

From the beginning it was impossible to make an extremely wide-angled lens for the Hasselblad 500C whose lenses all had built-in fully

synchronized Compur shutters. However, the development of advanced computer techniques in the past few decades has enabled the design of extremely complicated lenses of this type, designs whose computation would have taken scores of technicians centuries to perform in the old days.

All the wide-angle lenses for the single-lens reflex Hasselblad 500C/M, 500EL/M and 2000FC are of retrofocus design. The back focal length here, i.e. the distance from the vertex of the rear lens element to the film plane, is longer than the focal length. This type of design is necessary in order to provide sufficient room for mirror movement.

So the computer technology which made it possible to design these very complicated lenses has contributed to the solution of advanced problems confronting Hasselblad photographers all over the world. The 40 mm Distagon for the 500C/M and 500EL/M is made up of 10 elements. Its short focal length results in a wide angle of view. And having a big, bright focusing screen on which its effects can be assessed provides an impetus to creativity.

### Wide-angle photography on the rise

According to the American magazine Popular Photography, the number of extreme wide-angle lenses produced by the world's lens makers increased by 533 from 1966 to 1976. A large part of this increase was naturally due to the fact that high-quality, ultrawide-angle lenses have not been available until recent years. During the same period the production of extreme telephoto lenses only increased by 36%, but the telephoto design has been around much longer. Extreme telephoto lenses of high quality were very common long before 1966.

In view of all the opportunities for creative imagery presented by the new optics, it's not surprising that the world's newspapers, maga-

*Cover photo: By Dierckx*

*A top-quality wide-angle lens is often a must in architectural photography. The 40mm Distagon f/4 has an 88° diagonal angle of view and is fully corrected for rectilinear distortion, i.e. straight lines are reproduced straight no matter where they are located in the image field. The photographer can check things out fully on the focusing screen.*



Photo: Ajlana G. Bravitsky



*The 30mm F-Distagon f/3.5 has the shortest focal length of any lens in the Hasselblad system. It is a fish-eye design with a 180° diagonal angle of view. Lens distortion can be utilized to produce very striking photographs with great eye-appeal. A very*

*useful optic for advertising and fashion photographers.*



Photo: Sergei Sandin

*Even the picture above was taken with a 30mm (fish-eye) F-Distagon. Here, the rectilinear distortion is almost unnoticeable compared to the distortion you see in the picture on page 3. Straight lines passing through the center of the image remain*

*straight, and circles at the subject plane remain circular as long as their centers are at the center of the field. Rectilinear distortion seems to be eliminated almost completely when the lens is used judiciously.*



zines, advertising material, posters etc. are jam-packed with photographs taken with wide-angle lenses.

### Design

The biggest problem in the design of a wide-angle lens is to combine sufficiently even, corner-to-corner illumination of the entire field with a fast lens speed. In this respect the designers at Carl Zeiss, Oberkochen, have been successful in their wide-angle Hasselblad optics, whether of genuine wide-angle design such as the Biogon, or of retrofocus design such as the Distagon. And all the lenses, with the exception of the 30mm Distagon (fish-eye), are so fully corrected that rectilinear distortion is not apparent in practical photographic work. All lenses, no matter what the make, have some form of distortion, however slight or invisible to the eye. No matter what complicated calculations you can make with a computer, the creative fantasy and good ideas of the designer determine whether the result of design efforts will be a single lens or a whole series of lenses, as contemporary photographers demand in support of visual creativity.

### Practical guide

This small booklet is not intended as a technical description of wide-angle lenses but as a practical guide to some of the wide-angle opportunities open to users of the Hasselblad system.

The wide range of lenses in the Hasselblad system enables the photographer to obtain the framing of his choice at various lens-to-subject distances. This means you need a series of lenses for your camera. The many wide-angle lenses in the Hasselblad system, the world's most comprehensive camera system for the  $2\frac{1}{4} \times 2\frac{1}{4}$  format, have the following features:

All the lenses except the 50mm f/2.8 Distagon have built-in leaf shutters and can therefore be used with the Hasselblad 500C/M, 500EL/M and 2000FC cameras. The 38mm f/4.5 Biogon is an exception since it is permanently attached to the special-purpose wide-angle camera, the Hasselblad SWC.

The 50mm f/2.8 Distagon, lacking a built-in shutter, can only be used with the Hasselblad 2000FC which has a focal plane shutter.

### 30mm F-Distagon C f/3.5

The 30mm F-Distagon C f/3.5 is a fish-eye lens with an ultrawide  $180^\circ$  angle of view. It

is the only lens in the entire Hasselblad system which produces obvious rectilinear distortion in the form of curvature of straight lines not passing through the centre of the field. However, straight lines through the center of the field, such as a horizon, remain straight. Circles parallel to the film plane and with the field center at their center are reproduced as circles.

So the photographer can elect to use the 30mm Distagon in two ways. Conventionally for conventional pictures in which the distortion is hardly noticeable. (The camera must then be level, and straight lines in the image must pass through the center of the field.) Or as a lens for truly different pictures. In other words, the photographer can choose to utilize the optic's aberration to produce a consciously distorted image to confound the viewer.

"Distorted" images may be very useful in e.g. advertising and fashion contexts.

The 30mm Distagon can be used for "normal" photography, such as landscape work when a feeling of extra space and depth is desired. Or it can be used in cramped quarters when no other lens would be able to take in the entire subject.

Since you can check out your composition on a focusing screen, excessive distortion of perspective can be avoided. And with a Hasselblad spirit level on the camera's accessory rail it becomes easy to level the camera.

The 30mm Distagon is supplied with three filters and a neutral glass. A neutral glass or a filter is an integral part of the optical system of this lens and must always be used. The 30mm F-Distagon differs from other Hasselblad optics by having a permanently attached lens shade tailored to the ultrawide angular field. This is because even a normally shallow lens shade would cut off the corners of the  $180^\circ$  wide image.

### 38mm Biogon f/4.5

This Biogon lens was developed by Carl Zeiss designers more than 25 years ago, i.e. as early as 1951, and is still one of the finest lenses in the Hasselblad system. It combines high speed with a minimum of natural geometric vignetting. The lens is permanently attached to a special camera body, the Hasselblad SWC, and can therefore not be used in combination with the other Hasselblad cameras. The distance from the vertex of the rear lens element to the focal plane is too short to accommodate a mirror. So the Hasselblad SWC is fitted with an optical view-

## Hasselblad wide-angle lenses

	Max. aperture	Focal length mm	Angle of view		Diaphragm	Focusing range	No. of elements	Accessory mount	Weight	Length
			Diag.	Horiz.						
38mm f/4.5 Biogon	f/4.5	38	180°	112°	5.5-22	11 1/2 in (0.3 m-∞)	9	Series 26 filters	48 1/2 oz (1370 g)	4 1/2 in (115.5 mm)
38mm f/4.5 Biogon	f/4.5	38	90°	72°	4.5-22	11 1/2 in (0.3 m-∞)	8	Series 43 filters	46 1/4 oz* (1325 g)	—
40mm f/4 Distagon C	f/4	40	88°	69°	4-32	19 in (0.5 m-∞)	10	Series 104 filters	48 1/2 oz (1373 g)	5 in (124.5 mm)
50mm f/4 Distagon C	f/4	50	75°	58°	4-22	19 in (0.5 m-∞)	7	Series 43 filters	31 oz (885 g)	4 in (100 mm)
50mm f/2.8 Distagon F	f/2.8	50	74°	56°	2.8-22	1 ft (0.32 m-∞)	9	Series 86 filters	43.4 oz (1236g)	4.4 in (112 mm)
60mm f/3.5 Distagon C	f/3.5	60	66°	50°	3.5-22	2 ft (0.6 m-∞)	7	Series 43 filters	22 1/2 oz (645 g)	3 1/4 in (85 mm)

\* 1 with magazine

finder. With a 90° angle of view, this lens has the widest angle of view without rectilinear distortion of any lens in the Hasselblad system. The Biogon, extremely sharp even when used wide open, is therefore especially useful in cramped quarters when the best possible image quality is desired. For interiors and exteriors for example, but even for reportage and landscapes. Both horizontal and vertical lines are reproduced straight, no matter where they are situated in the image. At f/22 and with the lens focused on 5 ft, the optic's zone of sharpness extends from 26 in to infinity.

As a curiosity, we might mention that the Hasselblad Electric Data Cameras (HEDC) used on all the manned lunar expeditions were fitted with Biogon lenses, although with a somewhat longer focal length, i.e. specially designed 60mm f/4.5 Biogons.

#### 40mm Distagon C f/4

With an 88° angular field, the 40mm Distagon has almost the same angle of view as the 38mm Biogon. The difference between these nearly equivalent lenses lies in the fact that the Biogon is permanently attached to a camera body, as mentioned above, whereas the 40mm Distagon can be used with the 500C/M, 500EL/M or 2000FC cameras. And with a focusing screen at his disposal, the photographer has full control over the composition of his image. He can also easily check out depth-of-field and perspective. The 40mm Distagon is a retrofocus design so as to provide space for the mirror between the rear lens element and the focal plane.

The 40mm Distagon displays exceptional correction for all aberrations, but its optical properties are at their best when the lens is used at long lens-to-subject distances. A detent on the focusing ring reminds the photographer that the lens should be stopped down to obtain the best results at distances under 35 in. Details calling for maximum resolution should be located at the center of the field, since resolving power falls off towards the corners with the lens wide open—but only at the shortest lens-to-subject distances. Despite this slight limitation, combining the 40mm Distagon with a 10 mm or 21 mm extension tube may sometimes prove useful. The technical results will be satisfactory, and the imagery may be especially exciting with exaggerated perspective and wide depth-of-field. The foreground, which is naturally the main subject, predominates.

#### 50mm Distagon C f/4

The 50mm Distagon C f/4 can be regarded as a normal wide-angle lens and has a 75° angular field. Thus, the three aforementioned optics, the 30mm Distagon, 40mm Distagon and 38mm Biogon, are ultrawide-angle lenses. Many photographers use the 50mm Distagon as a normal lens instead of the 80mm Planar so as to obtain more information in their images and to attain wider depth-of-field, a little insurance against inaccurate focusing. Useful when you're in a hurry to grab an important shot and don't have time to focus carefully. Thanks to the large 2 1/4 x 2 1/4 format and the superlative Carl Zeiss lenses, image quality is good enough for giant blowups.



*Photo: Engel-Straussfeld*



*The 50mm Distagon f/4 is often referred to as the "normal" wide-angle lens. It is a universal optic suitable for a wide range of photographic applications in which the photographer needs a little wider coverage than is available with the normal*

*focal length lens. The 50mm Distagon is an obvious choice for trips abroad, thanks to its relatively small size and light weight.*



*Photo: Björn G. Brinkhult*

*The 60mm Distagon f/3.3 has the narrowest angular field (only 68°) of any wide-angle lens in the Hasselblad system. Making it a very useful and convenient lens. This optic is small and does not yield a pronounced wide-angle effect, but it still*

*retains many of the advantages of a wide-angle lens, such as a relatively wide depth-of-field. This may not be readily apparent in the photograph above since the lens-to-subject distance here is close to the optic's closest focusing point.*





Sharpness, contrast and even illumination of the field fulfill the highest demands professional photographers and advanced amateurs can make on a wide-angle lens. As is also true of the other Distagon lenses with their extreme asymmetrical element groupings, the 50mm Distagon is designed with optimum correction at long lens-to-subject distances. So it should be stopped down at short working distances.

The 50mm Distagon is one of the most popular lenses in the Hasselblad system. As a result of its versatility and moderate wide-angle perspective, many photographers use it as a universal lens. For the Hasselblad 500C/M, 500EL/M and 2000FC.

#### 50mm Distagon F f/2.8

The 50mm Distagon F f/2.8 is a new design featuring a floating element but has the same angle of view as the 50mm Distagon C f/4. It has no built-in shutter and can therefore only be used with the Hasselblad 2000FC which has a focal plane shutter. It can even be used with a Hasselblad 500C/M and 500EL/M, but the baffle in the camera body has to serve as your "shutter." The fastest shutter speed then becomes about 1/30 s. Slower speeds are easier to attain, since the baffle will stay open as long as the shutter release is kept depressed.

A floating element in a lens is an element that changes its position as the lens is focused.

This ingenious design feature results in maximum sharpness for the f/2.8 Distagon at all distances from 1 ft (the closest focusing point) to infinity with no need to stop down, even though the lens is of retrofocus design.

This high lens speed makes it possible for the photographer to work in poorly illuminated surroundings. It also yields a bright focusing screen image. Add to this the shallow depth-of-field you get with the lens wide open and focusing is greatly facilitated.

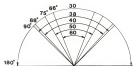
The mechanical lens controls, such as the diaphragm and focusing rings, buttons and catches, are modern in design and provide the photographer with a firm grip. Lens elements are all multicoated and precision-mounted in the lens barrel. This results in maximum resolution and a minimum of distortion and natural vignetting.

The 50mm Distagon F f/2.8, like the 50mm Distagon C f/4, is a universal lens with a "normal" wide-angle and is useful for a wide range of assignments.

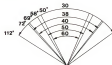
#### 60mm Distagon C f/3.5

The 60mm Distagon C f/3.5 can also be regarded as a normal wide-angle lens but with a 66° angle of view. For the Hasselblad 500C/M, 500EL/M and 2000FC. It is a comparatively new addition to the Hasselblad line. At the end of the 1930's two different 60mm Distagon lenses were being made for Hasselblads, with maximum apertures of f/6.3 and f/5.6 respectively. When the 50mm Distagon came onto the market in the beginning of the 1960's, the 60mm Distagons were discontinued. A new version with the same focal length but a faster speed has been introduced at the request of many photographers.

The object field is 1.8 times larger than the object field of the 80mm Planar. So images yielded by the 60mm optic do not display any pronounced wide-angle effects. Here is a comparison between the angular fields of wide-angle lenses in the Hasselblad system



Angular fields always refer to the diagonal angle of view. The horizontal angles of view are as follows:



#### T\* multicoating

All the elements in Hasselblad lenses, with the exception of those in the 105mm UV-Sonnar and 250mm Superachromat, are multicoated. The Carl Zeiss own version of this process is designated T\* (tee-star). T\* anti-reflection coating is essential in obtaining maximum image brilliance. This is the case

40

50

60

80





*Hasselblad wide-angle lenses give the following image framing:*

30mm Distagon



38mm Biogon



40mm Distagon



50mm Distagon



60mm Distagon



*compared with the image framing obtained with the "normal" 80mm Planar lens*



*Photo: Jens Karlsson*

especially for wide-angle lenses, since these lenses generally contain more elements than other lenses, zoom lenses excepted, of course. In 1933 Carl Zeiss became the world's first lens maker to use anti-reflection coating and has more experience than any other lens maker in practicing this vitally important procedure.

### Lens shades

Wide-angle lenses cannot be used with truly efficient lens shades. Efficient shades would cause vignetting. But all lenses should still be fitted with some kind of lens shade, however shallow. A lens shade contributes to maximum image sharpness and brilliance. In addition to shielding the lens from extraneous light, a lens shade also protects a lens from damage to the often large front element, damage which costs a small fortune to repair. In any respect, there may be instances in which flare or ghosts become apparent in your photographs, despite all the precautions taken to avoid them. This risk should be kept in mind, especially in backlit shots, and efforts should be made to keep direct light rays from striking the lens. You can keep the front element in shadow behind a trunk, a head or whatever is handy.

### Pick the right lens for the right occasion

Every Hasselblad owner needs a series of lenses in order to utilize the system's enormous potential. The number of lenses in that series and the range it encompasses have to be worked out on an individual basis. Needs change and work methods differ. Assignments vary for the pro as do the subjects selected by the amateur.

Every photographer needs a wide-angle lens. That's pretty obvious. But which one do you pick? Possibly the 30mm Distagon, a medium wide-angle optic. The 30mm f/4 if you have a 500C/M or 500EL/M or the 30mm f/2.8 if you have a 2000FC.

If you need a whole range of focal lengths, you might pick a 30mm F-Distagon, 30mm Distagon or a 40mm and 60mm Distagon. This gives you useful variation in available focal lengths and angular fields. If you require the very finest technical quality in work with the lens wide open, you might opt for the 38mm on the Hasselblad SWC. The problem then is that you can't check out your image on a focusing screen since the camera has an optical viewfinder. On the other hand, you can use a focusing screen adapter attached

instead of the magazine. This way you can view your image in about the same way as on a focusing screen.

If you need to utilize all the opportunities presented by the system, you should have the whole series, all six lenses.

### Angular field and depth-of-field

Wide-angle lenses have two advantages compared to other lenses. A wider *angular field* and greater *depth-of-field*. The shorter the focal length of a wide-angle lens, the wider the angular field and depth-of-field.

If you have to work in e.g. a small room from a fixed camera site you will be able to take in more of the room, the shorter the focal length of the lens you use on your camera. A wide-angle lens is a must for shots of interiors in cramped quarters.

### Focal lengths of wide-angle lenses

A series of photographs taken with the five different wide-angle lenses in the Hasselblad system are shown on page 11. The pictures were taken from the same camera site. For purposes of comparison we have added a photograph taken with the normal 80mm Planar lens.

In the adjacent photograph taken with a 38mm Biogon, we have drawn in lines showing the angular field of all the wide-angle lenses in another way. In the middle you will find the field of the normal lens for comparison.

### Depth-of-field of wide-angle lenses

This series shows how depth-of-field increases as the focal length of the lens used declines. Even here we used a fixed camera site and the same aperture, f/5.6. The lenses were also focused on the same point.

News photographers make frequent use of wide-angle lenses when it's too crowded for effective use of a viewfinder. They then pre-set the focus at about the right lens-to-subject distance and can still expect to get sharp photographs because of the wide-angle optic's wide depth-of-field. They just fire away holding the prefocused camera over their heads, pointed in the general direction of the subject. Most people have seen pictures of photographers working this way on television. Use of a small f/stop also provides additional depth-of-field. The ensuing photographs are sharp enough to permit cropped blowups from the  $2\frac{1}{4} \times 2\frac{1}{4}$  negative, blowups good enough for publication.



Photo: Russell Lamb



*The industrial photographer often has to work in cramped spaces. In these conditions he will need the shortest focal length lenses in order to take in whole subjects with no loss of image spaciousness. And he may need a*

*whole series of lenses to obtain the desired framing for each shot. Products made at shipyards are often on a gigantic scale. Here, only a wide-angle lens is capable of covering the entire subject.*



*Photos: Corbis/Fotograf 4/5*

*Most fashion photographers work with one or more wide-angle lenses every day. These lenses are necessary in obtaining adequate coverage with the desired depth-of-field. The fully synchronized leaf shutters in Hasselblad C lenses are of inestimable*

*value in studio work. The capability of shooting at 1/500 s with the flash triggered at the right moment is just what the studio photographers need in many instances.*



### Absolute sharpness

As we noted above, the smallest aperture produces the largest depth-of-field. But it does not always produce optimum sharpness. For most photographic lenses, optimum sharpness is to be found in the first third of the aperture range. This means that if you want the best resolution, you should stop the lens down a stop or two from maximum aperture. That's where you usually find your best sharpness.

As mentioned above, only one of the Hasselblad wide-angle lenses displays any apparent rectilinear distortion, i.e. the 30mm F-Distagon. All the others reproduce straight lines correctly. On the other hand, the images yielded by some of the other lenses may appear to be distorted because of the predominance of the foreground and because of exaggerated perspective. In this exaggerated perspective, excessive convergence of vertical lines causes houses to look as though they're toppling over when photographed with the camera pointed up at them. What we're really talking about here is a kind of distortion produced by a lack of parallelism between the film plane and building lines, not distortion caused by a lens aberration. When we look up at a building, the eye actually works about the same way as a wide-angle lens, but the brain processes the retinal image so that building lines display more "natural" convergence.

When is the use of a wide-angle lens really suitable? The answer is simple. At any time. But some subjects are obviously better suited to them than others. One such subject is architecture.

### Architecture—interiors and exteriors

Architectural photography is a big field. That's why there is a special Hasselblad brochure on the subject. Here we will only touch on some of the ways wide-angle lenses can be used for architectural applications.

First of all, when space is so limited that the narrow angular field of other lenses is inadequate. This is one of the cases in which it is easy to get excessive convergence of image lines. The shorter the focal length, the greater the sensitivity of the image to this phenomenon. The slightest inaccuracy results in horizontal or vertical distortion. Two simple accessories in the Hasselblad system help you to come to grips with this problem. One is the spirit level. It is attached to the camera accessory rail and used to level the camera.

The other is the checked screen used atop the camera's focusing screen to facilitate image alignment.

A large building which you have to photograph with a wide-angle lens in order to encompass the entire structure can be shot after camera leveling with the spirit level so that distortion of the building's lines is minimized. As a result it may only be possible to use the upper half of a negative or transparency, but you will avoid distorted lines. If you can back off enough, a longer focal length lens is recommended, since it is easier to avoid distorted reproduction if you work with a telephoto lens.

Another useful trick is to shoot a few floors up from a building opposite your subject. It then becomes simpler to keep image lines parallel to the film plane. This also enables you to make use of the entire negative. A lot of industrial photography also comprises architectural subjects, i.e. buildings, factories etc.

Using a tripod for pictures of this kind is a must. Otherwise it is just about impossible to ensure that the camera is kept level at the moment of exposure.

### Reportage

Reportage work with wide-angle lenses has already been mentioned here. The wide-angle lens is obviously very useful in this field, since it provides wide coverage of a subject with no loss of resolution. The quality of the Zeiss lenses also makes it possible to blow up parts of the  $2\frac{1}{4} \times 2\frac{1}{4}$  negative with excellent results. Today, news photographers all over the world use wide-angle lenses for most assignments except sports photography.

The biggest advantage of wide-angle lenses is that you can work in the same way as with one of the old fixed-focus box cameras. The lens-to-subject distance is preset and you just point the camera in the direction of your subject. Sharpness is usually adequate, even with the lens wide open, but a small f/stop gives you an even bigger margin of safety. This technique is useful when accurate focusing is not possible.

### Advertising and fashion

Advertising and fashion photographers are always looking for new ways of expressing themselves to make their pictures as striking as possible. So this type of photography changes a lot. Advertising photographs are also subject to capricious changes in taste.

One year, telephoto shots may be all the rage. The year after, wide-angle shots may be the thing. Followed by a year with diffused imagery or widespread use of pop filters etc. The Hasselblad system has the flexibility to provide for just about any taste. Most people would agree that the fashion and advertising photographer needs one or more wide-angle lenses. Studios are often so small that a wide-angle lens is necessary just to take a conventional picture of a large subject. And a wide-angle lens then becomes a must when that subject has to be photographed in a set built up around it.

The simplest way of getting a product to dominate a shot is to locate it in the foreground and work with an ultrawide-angle lens. Thanks to the wide depth-of-field available with the lens stopped down to the smallest f/stop, the zone of sharp focus will encompass the entire object.

If the object is very small, say about the size of a match box, you can use a 10 mm, 16 mm or 21 mm extension tube with your wide-angle lens and acquire breathtaking perspective.

This is admittedly not recommended by the lens designers at Carl Zeiss, as the lenses display their best resolving power when focused on infinity. But I myself have experimented with close-up photography using a wide-angle lens and obtained excellent pictorial results. Just place your subject in the center of the field where the best close-up sharpness is to be obtained, since there is a loss of resolution at the corners of the field at short lens-to-subject distances. The situation is a little different with the new 30mm Distagon F/2.8 for the Hasselblad 2000FC because of its floating element. This term was described above. Thanks to the use of the floating element, this lens displays high performance even in the close-up lens-to-subject range. It is practically a macro lens.

Fashion photographers sometimes use the sky as the background for a model. This is facilitated when the pictures are taken with a wide-angle lens, even if the resulting perspective is exaggerated.

On the other hand, exaggerated perspective is not uncommon in fashion photographs. Shots taken from below or above, for example. All made possible by the wide angular field and wide depth-of-field.

These characteristics of a wide-angle lens are required for many advertising photographs. Take a newly built tanker, for example. Pho-

tographed head on from a helicopter hovering over the stern and with the vessel churning along at top speed, the ship looks even bigger than it is.

Converging lines can be intentionally used to obtain interesting visual effects.

The ultrawide-angle lens is the right optic for photographers out to provide a different view of the world and to draw attention to their work.

### Portraits

The portrait photographer has no need for a wide-angle lens except when taking group shots or full-figure shots in a small studio. Small studios are common for portrait photographers all over the world. A wide-angle lens is then essential. The best focal length is something you have to work out for yourself. Group shots may call for lenses with focal lengths as short as the 38mm Biogon or 40mm Distagon. The size of the group governs the choice. In many cases, a 50mm or even a 60mm Distagon will be sufficient.

Advertising photographers occasionally make intentional use of the wide-angle optic's exaggerated perspective in an effort to obtain different pictures, pictures which are real eye-catchers. This type of photograph is clearly impossible for the ordinary portrait photographer. No subject wants himself portrayed that way, but if a portrait photographer makes an intentional effort to shock, an ultrawide-angle lens may be the answer. As portrait photographers sometimes even do advertising work, why not an exaggerated brow, nose or chin?

### Landscapes

Landscapes are some of the most common subjects photographed with wide-angle lenses. This isn't so strange. A wide-angle lens adds a sense of spaciousness. You can extend your zone of sharpness from the foreground right out to the horizon while working with a hand-held camera.

One attractive landscape technique is to shoot with the camera tilted forward. The resulting photograph tends to lead the eye into the image past the foreground and on to the horizon at the top. Or just the reverse. By tilting your camera backwards a little you can take in the entire sky with the horizon at the bottom of the frame. Cloud-filled skies can make very striking subjects.

You have to make use of the foreground you often pick up in landscape work with wide-





Photo: L.J. Lightfoot



*Tilting the camera forward to obtain a high horizon line is a classic procedure in landscape photography. The viewer's eye is then led from the foreground to the background. And the wide-angle lens enables the photog-*

*rapher to reproduce everything sharp.*



Photo: Ulf Carlsson

*Aerial photography with the 30mm Disagon is not usually the method of choice. But it does result in wide angular coverage, even at low altitudes. And at low altitudes air pollution is less pronounced so clearer photographs can be obtained.*

*Thanks to the fact that the house in the picture here is round, image distortion has almost magically vanished.*

Daniel D. Teoli Jr.  
Archival Collection



angle lenses. This adds an additional dimension to the images. You can work with a foreground, the central field of vision and background in order to obtain real tension in a landscape photograph. You just decide which part is most important to you and focus selectively on it. The wide-angle lens is a true landscape lens!

#### **Aerial and underwater photography**

The wide-angle lens is an obvious accessory in these special fields. In aerial work, you may need both the 50mm and 40mm Distagon to obtain an adequate angle of view. That way you can fly at a low altitude where the effects of air pollution are less pronounced and image brilliance is at its best.

That's also why you should use the shortest possible focal length lens in the Hasselblad underwater housing in underwater work, but here because of water pollution. Water also refracts light, thereby reducing the angular field. The effects of this refraction can be counteracted if correction lenses are used in the Hasselblad 500EL/M underwater housing. The angular field is then the same as in air. You can use either the 50mm Distagon or 60 mm Distagon in the Hasselblad 500EL/M underwater housing.

#### **Flash photography**

In flash photography with wide-angle lenses, you should make sure the flash unit has an adequate angle of coverage. Most flash reflectors only cover an angle of 30° or 60°. Some can be set for 60° to 70°. But this means that the light beam will still be too narrow to cover the field of ultrawide-angle lenses, with vignetting as a result. No unmodified flash unit will cover 90°. On occasions when a 90° angle of coverage is needed you can remove the flash reflector and work with the bare flash tube or bulb. You have to make tests to determine the correct f/stop with this procedure, since some flashtube output is lost in the absence of a reflector. A problem in this context is that the foreground may be illu-

minated too brightly in relation to remoter parts of the subject. Then you should try to find another shooting angle or to bounce your flash off a wall or ceiling. Since a lot of light is lost this way, don't forget to open up the lens 2, 3 or even 4 f/stops in bounce flash. Test shots taken with the magazine for Hasselblad Polaroid film and with different f/stops will disclose the correct exposure in a matter of minutes.

#### **Wide-angle photography with a difference**

Wide-angle photographs taken with a 150mm Sonnar or 250mm Sonnar may sound a little paradoxical but are quite feasible. We use just such a method at the Hasselblad factory. There are two ways of doing it. One way is to fire off four cameras simultaneously. The other is to use a horizontal camera on a specially designed panorama head and to swing the camera a given number of degrees for each take. The horizontal angle of view of the 150° Sonnar then becomes 84° ( $4 \times 21^\circ$ ). Thus much more than that of the 38mm Biogon or 40mm Distagon. The angular field of a 250mm Sonnar becomes 52° ( $4 \times 13^\circ$ ), i.e. about the same as the 60mm Distagon. We use this method for our own multivision slide shows. It works just fine and might be a good idea for photographers who produce their own multivision programs.  $2\frac{1}{4} \times 2\frac{1}{4}$  slides give you screen imagery far more brilliant than that yielded by smaller film formats.

#### **Accessories**

There are a number of different accessories for wide-angle lenses, just as for all the other Hasselblad lenses. These accessories either facilitate photography or provide photographers with greater opportunities for creative work.

In my opinion, a lens shade is the most important accessory of all. No photographer should ever be without a shade on his lens. A truly golden rule.

The lens shade on the 30mm F-Distagon is extremely shallow, permanently attached to the lens and cut off at the corners to prevent vignetting. There is a quick-focusing handle to facilitate focusing. It can be used with the 38mm Biogon, 40mm Distagon, 50mm Distagon f/4 and 60mm Distagon. There are also a number of filters available. Series 63 filters fit the 38mm Biogon, 50mm Distagon f/4 and 60mm Distagon. Series 86 filters fit the 50mm Distagon f/2.8. And series 104 filters fit the 40mm Distagon.

*Back-cover photo:*

*Never use a Distagon lens in combination with extension tubes, the lens designers maintain. But you can still obtain results of excellent technical quality if the main subject, as is the case here, is placed at the center of the field. The 40mm Distagon and 19 mm extension tube with a Hasselblad 500C/M.*

# H A S S E L B L A D®



Photo: Ulf Spångberg

---

VICTOR HASSELBLAD AKTIEBOLAG, Box 220, S-401 23 Göteborg, Sweden

Lacoste: Lars Gustafsson